CLAIMS

WHAT IS CLAIMED IS:

1. A light collector element for use in combination with a mechanical thermo-voltaic solar power system, comprising:

a primary collection lens for collecting light from a light source;

one or more secondary fine-focus lens for receiving focused light from said primary collection lens;

an optical housing for structurally holding said primary and secondary lenses, said housing further enclosing said focused light from said collection lens;

an optical conduit coupled to the output of said secondary fine-focus lens for delivering collected light to a mechanical generator;

a light collector alignment means, said alignment means having two or more collector alignment photocells, said photocells being attached to a servomotor subassembly mounted at the base of said light collector element for aiming said light collector element at said light source for maximum light collection; and

an alignment processing circuit mounted in said servomotor subassembly for automatically aligning said light collector element for maximum output.

2. The assembly of claim 1, wherein said primary collection lens is a large-area flat lens for collecting and focusing said light to a smaller area at the surface of said secondary fine-focus lens.

3. The assembly of claim 1, wherein said optical conduit is further comprised of one or more fiber optic cables.

4. The assembly of claim 1, wherein said optical housing has an inverted pyramid shape, the larger end being exposed to the incoming illumination, the smaller end providing suitable optical conduit connecting means.

5. The assembly of claim 1, wherein said alignment photocells are mounted at the bottom of opaque cylindrical tubes, thereby providing a maximum alignment signal when said tubes are aimed directly at said light source.

6. The assembly of claim 5, wherein four said alignment photocells are mounted on the top, bottom, right side, and left side of said light collector element for providing maximum alignment capability.

7. The assembly of claim 1, wherein said servomotor subassembly is further comprised of:

a first servomotor for aligning for pitch; and

a second servomotor for aligning yaw.

8. The assembly of claim 1, wherein said alignment processing circuit is a hybrid analog-digital circuit for measuring the light output from said collector element and controlling said servomotors for maximum light collection.

9. A mechanical thermo-voltaic solar power system, comprising:

a solar light collector array comprised of a plurality of light collector elements mounted to a mounting board, each said light collector element being further comprised of:

a primary collection lens for collecting light from a light source;

one or more secondary fine-focus lens for receiving focused light from said primary collection lens;

an optical housing for structurally holding said primary and secondary lenses, said housing further enclosing said focused light from said collection lens;

an optical conduit coupled to the output of said secondary fine-focus lens for delivering collected light to a mechanical generator;

a light collector alignment means, said alignment means having two or more collector alignment photocells, said photocells being attached to a servomotor subassembly mounted at the base of said light collector element for aiming said light collector element at said light source for maximum light collection; and

an alignment processing circuit mounted in said servomotor subassembly for automatically aligning said light collector element for maximum output;

a mechanical generator, said generator comprised of;

a heat chamber, said heat chamber receiving a plurality of said optical conduits from said light collector array , said conduits connected to said heat chamber by optical attaching means;

a gas burner mounted below said heat chamber for applying auxiliary heat to said heat chamber; and

an electrical generator mechanically coupled to the rotatable output of said mechanical generator for providing a source of electrical power; and

a storage and retrieval unit for receiving electrical power from said electrical generator, said storage and retrieval unit further comprising:

a power distributor, a first input of said distributor being coupled to the output of said electrical generator, a first output of said power distributor providing electrical power to an application load, and a second output of said power distributor supplying power to the electrodes of a water separator, said water separator being filled with water, said water separator separating said water into hydrogen and oxygen;

a hydrogen pump, the input of said pump coupled to the hydrogen output of said water separator;

a hydrogen tank, the input of said tank being coupled to the output of said hydrogen pump, the output of said hydrogen tank being connected to said gas burner for supplying auxiliary heat to said system;

a fuel cell, the input of said fuel cell being connected to the output of said hydrogen tank, the output of said fuel cell being connected to a second input of said power distributor; and

an additional stationary photocell sensor for the measuring ambient light level, the output of said additional photocell sensor used to switch said system between the storage and retrieval modes.

10. The assembly of claim 9, wherein said primary collection lens is a large-area flat lens for collecting and focusing said light to a smaller area at the surface of said secondary fine-focus lens.

11. The assembly of claim 9, wherein said optical conduit is further comprised of one or more fiber optic cables.12. The assembly of claim 9, wherein said alignment photocells are mounted at the bottom of opaque cylindrical tubes, thereby providing a maximum alignment signal when said tubes are aimed directly at said light source.

13. The assembly of claim 9, wherein said servomotor subassembly is further comprised of:

a first servomotor for aligning for pitch; and

a second servomotor for aligning yaw.

14. The system of claim 9, wherein said mechanical generator is a Stirling engine, said Stirling engine for use in higher efficiency systems.

15. The system of claim 14, wherein the hot node of said Stirling engine is contained within the heat chamber of said power system.

16. The system of claim 14, wherein said Stirling engine further comprises a cold node.

17. The system of claim 9, wherein said mechanical generator is a steam turbine engine, said steam turbine for use in a lower cost system.

18. The system of claim 17, wherein said boiler of said steam turbine forms the heat chamber of said power system.

19. The system of claim 9, further comprising a bank of batteries wherein unused electricity is stored.

20. An automatic aiming system for aligning the light collector elements in a mechanical thermo-voltaic solar power system, comprising:

up to four collector alignment photocells, said photocells being mechanically attached to a servomotor subassembly for aiming said light collector elements for maximum light collection, said alignment photocells being mounted at the bottom of opaque cylindrical tubes, said photocells being positioned at the top, bottom, right side, and left side of said light collector elements, thereby providing a maximum alignment signal when said tubes are aimed directly at a light source;

two servomotors mounted in said servomotor subassembly, a first servomotor for aligning the pitch of said photocells, a second servomotor for aligning the yaw of said photocells; and

an alignment processing chip mounted in said servomotor subassembly for automatically aligning said light collector elements for maximum output, said alignment processing chip being a hybrid analog-digital circuit for measuring the light output from said collector elements and controlling said servomotors for maximum light collection.